

Attorney Docket No.: P-8503-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): ZAIT, Eitan Examiner: Fraser, Stewart A.
Serial No.: 10/564,972 Group Art Unit: 1795
Filed: August 1, 2006 Confirmation No.: 7182
Title: METHOD FOR CORRECTING CRITICAL DIMENSION VARIATIONS IN PHOTOMASKS

INTERVIEW AGENDA**NOT FOR INCLUSION IN FILE HISTORY**

Via fax to: (571) 270-6126

DO NOT ENTER S.F. 9/22/2009

Dear Examiner Fraser:

At tomorrow's interview, I would like to discuss pending claim 1, which has been rejected over the Ziger reference (US 2003/0157415) in view of the Zait reference (US 2002/0086245).

I would like to point out the differences between the references cited and the presently claimed invention.

I would further propose to amend the claim along the general direction of the following draft claim element:

"... using laser radiation directed into the substrate through the back surface providing Shading Elements within the substrate of the photomask in regions which correlate to regions of the wafer exposure field where CD variations greater than a predetermined target value were determined, ..." Applicant proposed different amendment - see Interview Summary Form

Ziger disclosed an apparatus and a method for compensating critical dimension deviations across a photomask. In this method, a photomask is partitioned into a plurality of regions. A critical dimension is then measured for each of the regions in the photomask. Based on the measured critical dimensions, a deviation map is generated to map deviation of

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the critical dimension from a target dimension for each of the regions in the photomask. From the deviation map, an amount of actinic radiation needed to be attenuated to compensate for the critical dimension deviation from the target dimension is determined for each of the regions of the photomask. Based on the determined attenuation amount of actinic radiation, the transmission of the actinic radiation through each of the regions in the photomask is attenuated such that the critical dimension deviation is compensated to the target dimension for each of the regions in the photomask. Ziger suggests several ways for transmission attenuation which include absorbing species (dopants), deposition of semi transparent material over selected mask regions.

Zait et al. teaches a method and apparatus for manufacturing patterns on a reticle blank. The method comprises providing ultra-short pulsed laser beams, focusing means, relative displacement facilitator for facilitating relative displacement of the reticle blank relative to said at least one of a plurality of target locations, and a controller for controlling the synchronization and operation of the laser beam source, the focusing means and the relative displacement facilitator. Ultra-short pulsed laser beam is irradiated in a predetermined pattern directed at the second surface and passing through the substrate, focused on the chrome layer or on its proximity.

Applicants assert that neither Ziger nor Zait et al., alone or in combination, teach or suggest, a method for compensating for critical dimension (CD) variations of pattern lines of a wafer, which includes "using laser radiation directed into the substrate through the back surface providing Shading Elements within the substrate of the photomask in regions which correlate to regions of the wafer exposure field where CD variations greater than a predetermined target value were determined", as it is claimed in amended independent claim 1, from which claims 2-12 depend.

I look forward to discussing this matter with you at tomorrow's interview.

Regards,

GUY.